

# NASA TECH BRIEF



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## Heat-Treatment of Metal Parts Facilitated by Sand Embedment

### The problem:

To eliminate the need of special holding fixtures used to prevent strains and warping of metal parts of complex shape subjected to heat treatment, such as annealing or stress relieving.

### The solution:

Embed the metal parts in sand contained in a steel box. The sand not only provides a simple, inexpensive support for the parts but also ensures more uniform distribution of heat to the parts.

### How it's done:

The heat treatment process is carried out by placing the box containing the parts completely embedded in sand into a temperature controlled oven. Use of an oven may be eliminated, at an appreciable cost saving, by attaching electrical leads to the ends of

the steel box and resistance-heating the box and contents to the desired temperature.

### Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B66-10616

### Patent status:

No patent action is contemplated by NASA.

Source: C. C. Briscoe and R. C. Kelley  
of the Boeing Company,  
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